

I Importance of maize in U.S. 1, 2, 3. 1960

II Where products come from - kernels, parts - studies
Plant structure - tassel, ear, nodes - branches.

III Importance of maize in the Americas.

Where grown - when.

Propagation - selection, from what.

Recent - causes. Mexico - origin - Transport.

Origin - projection Teocinte (Teo. Cintle)

Why - plant, chromosomes, synapsis, c.o.
other order. Knob locations.

IV. To other countries - Tribes

Guatemala, Central Am., Northern Am.

Andes -

origin of Races -- Tribes. selection (so Brazil)

Polyorphism - laws. slide 3. Plant Breeding

Extent of polymorphism -

E253 Use in tracing of your migration - M. product.

Hnab -- monograph. Dec 1981 From ^{Dec} 1938

V. Mendel 1865 to 1900 changes & results.

1. By 1900 - what known - projections.
2. Maize plant breeders -- so much material
3. Doubts in general - skeptical. + H. Morgan 1910
to 1935 -- students, Wilson, Drosophila

VI. My association ^b 1921, 1923, 1927. Pl. breeding.

2. 1922-1924 - grad. students. Plant Botany.
3. Their accomplishments - 1927-1935.
"golden age of genetics at Cornell."

4. Drosophila salivariensis -- 1935 Bridge

C.S.H. *influence* *sorghum*. Significant changes - 6

- I. Mexico + U.S. Economy = most important part - why?
1. Food - animals - hog - cattle - poultry -
 2. " Humans - cereals - popcorn; corn-on-cob, canned corn, cornbread, hominy grits, corn flakes, corn starch, corn oil, corn syrup, corn-liqueur, corn-nuts"
 3. Commercial - processed - ~~not~~ corn - flour; Tamales
flour on candies, sweetners - caramel, paints,
paper products, pharmaceuticals, etc. corn cob pipes.

II. Where products come from - mainly kernel -

1. Kernel parts: Pericarp; endosperm; pericarp, endosperm;
alt native buyer: C. I. Korn; S. D. 1, 2
Gars - W. Am., Var P.
2. Structure of peanut:
① grass - part - Reed. nodes maize or not
② early stage - nodes - potential hauler, terminal branch
③ Tuber vs commercial maize - why different.

III. Importance of maize in N America.

1. Where grown -- modern tribes -- only grain in America.
(no wheat, barley, rye, rice, sorghum, millet).
2. N. E. N. America - Basic foods - corn - beans - squash
So. Am. = maize, more restricted - cassava.
3. Maize - can't propagate: self-propagation - why?
4. Where did maize originate? So. W. Americinity.
From what source?
5. Native plant - Mexico + Guatemala - like maize
except ears -- why self-propagation? Pojo
Tzo + maize + native name Tzo-Cuitzli good maize maize
Compositae. Native name Tzo-Cuitzli good maize maize
6. Came - Mexico - 5000 yrs ago - long - since corn.
7. To Guatemala - Central Am. Indian. S. Am.
introduced into Andes (2000 yrs ago). spread -
8. Plant breeding - Modern tribes -- selectors. Purple
pop, flower, stem, pigmented - for better, etc.
9. Convergence -- Highly polymorphic - ears - Shuttle 3.
constant pop. in mutationization.

- i. Polymorphism - all parts - Enzymes, mung beans (2 insertions, deletion, - rampant at D 17 & 18 VQ, part. mitochondrial - single alleles 4, 5)
- ii. Discovery of sun + migration of maize cells - knobs, enzymes, DNA polymorphism, mitochondria cytoplasmic inheritance. Knobs + trichomes - start monograph - Dec 1951.

IV Contribution of Maurice to genetic knowledge.

- A. Early - 1865 - Mendel - Dom. sec. No recombination
1865 - 1900 5. Uniline dyes vs. common laboratory film.
 Rose purple - shell staining - pre-breeding - Parts of cells -
 Fixing for microscopic examination 1884.
 Sectioning - embedding - slicing.
 Theory of microscopic image - 1883 1884
 (modern) ① Dissection rule (homologous)
 (modern) ② Fertilization
 ③ Rediscovery of Mendelian inheritance
 Publication - auto - plants -

Projections: onto chromosomes, replication
 Telomeres - synapsis + C.O. (chromatids)
 Development - gamete formation -
 fertilization

- B. Specification - Biologist - Science into 1920.
 1. T. H. Morgan - e. conf. Drosophila, grad. students
 2. 1910 - 1915 = 7 Book on meadowhen inheritance
 3. 1921 - Cornell - genetic course - Plant Breeding - maize
 Graduate course - Cytology, Botany, University
 Ph.D. - maize, 1922
 4. 1927 - 1935, Cornell - "Golden Days of Genetics - Cornell"
 4. Graduate students - Research - bio + anthropogenetics
 Activities -

1927 - 1935 - Cornell -

Cytogenetics - advanced rapidly.

D.N.C. 1935
 Salina

- 3) M212+ 1927-1931 Early. no D.P.
unpublished
1. 10 linkage groups - our groups due to linkage groups.
 2. where interchanges occurred between 2 chrs.
 3. Physical proof of genetic crossing over.
 4. First instance of recognition of cytoplasmic or sterility.
 5. mutants affecting spindle-pole orientation + poly mitosis at meiosis - micronuclei.
 6. chromosome breaks - fusions - "sticky chromosomes".
 7. x-ray modification of chrs. an inversion, translocation, deficiencies. Ring chromosomes between.
Replication - semi-conservative - sister strands exchange - Double-sized cup. Centriole - Mechanical rupture - Telophase: fusion of bodies.
 8. Chromosomal component responsible for forming a nucleolus.
 9. Repeated components in parts of chrs.
Knots, (chromo knot), Centromeres, Nucleolar Organizers.
 10. Peculiar aspect of meiotic synapsis = non linear association. Synaptonemal complex - zipper.

Shortly later - 1937-1942.

1. single breakage & double strand break. are sufficient chrs.
Heteropy: new telomere = Repetition of 17A - barley
G.J.b. cycle: no breaking - endonuclease
2. joining broken ends - basic - ♂ x ♀ = X maize. 1941
Genetic behavior
3. genome shock - Transferring 1 locus 1944-45
Resolution of gene action - 1944-45. [no D.P.]